BULLETIN

OF THE INSTITUTE OF METALS

VOLUME 1 DECEMBER 1952 PART 16

INSTITUTE NEWS

Election of Officers

The following members have been elected to fill vacancies on the Council, with effect from the 1953 Annual General Meeting.

As President:

Professor F. C. THOMPSON, D.Met., M.Sc., F.I.M., Professor of Metallurgy, University of Manchester.

As Vice-Presidents:

Major C. J. P. BALL, D.S.O., M.C., F.R.Ae.S., Chairman, Magnesium Elektron, Ltd.

Professor G. V. RAYNOR, M.A., D.Phil., D.Sc., F.R.I.C., Professor of Metal Physics, University of Birmingham.

As Ordinary Members of Council:

Mr. W. A. BAKER, B.Sc., F.I.M., Research Manager, British Non-Ferrous Metals Research Association.

Mr. J. C. COLQUHOUN, M.B.E., Chairman and Managing Director, The Manganese Bronze and Brass Co., Ltd.

Mr. E. R. GADD, F.I.M., Chief Metallurgist, Engine Division, The Bristol Aeroplane Co., Ltd.

The Hon. JOHN GRIMSTON, M.P., Director and General Manager, Enfield Rolling Mills, Ltd.

Senior Vice-President, 1953–54

The Council of the Institute has elected Dr. S. F. DOREY, C.B.E., M.I.C.E., M.I.Mech.E., F.R.S., Chief Engineer Surveyor, Lloyd's Register of Shipping, London, to serve as Senior Vice-President for 1953–54, and he will be their nominee for the Presidency in 1954–55.

Informal Discussion on "Rolls and their Maintenance in the Non-Ferrous Metals Industry": Change of Time

This meeting—arranged by the Metallurgical Engineering Committee—will be held in the University, Edgbaston, Birmingham 15, on Thursday, 8 January. It will begin at 11.30 a.m., and NOT at 2.30 p.m., as previously announced. Members who wish to lunch (1 p.m., price 5s. on booking) in the University refectory, must advise the Secretary of the Institute to that effect *not later than* 31 *December*. The visit to the Aitchison Laboratories will begin at 10.30.

1953 Autumn Meeting

The 1953 Autumn Meeting will be held in Southport, Lancs., from Monday, 21 to Friday, 25 September, inclusive.

Election of Members

The following 17 Ordinary Members, 1 Junior Member, and 4 Student Members were elected on 15 October 1952:

As Ordinary Members

BELCHER, Kenneth Willis, Works Manager, N. M. Rothschild and Sons, Royal Mint Street, London, E.1.

BRITTAIN, Charles Peter, B.A., Research Student, Department of Metallurgy, Cambridge University.

BURRACK, Harry Bob, B.Ch.E., Chief Plant Metallurgist, Reynolds Metals Company, McCook Plant, Brookfield, Ill., U.S.A.

BURROW, Harold Cecil, Engineer's Agent, 1048 Bolton Road, Bradford, Yorks.

BUSH, Spencer H., M.S.E., Instructor in Dental Metallurgy, School of Dentistry, University of Michigan, Ann Arbor, Mich., U.S.A.

DAVIDTZ, George Christian, A.I.M., Works Metallurgist, Union Steel Corporation (S.A.), Ltd., P.O. Box 48, Vereeniging, Transvaal, South Africa.

GOVENLOCK, Robert, Scientist-in-Charge, Midland Laboratory Guild (1928), Ltd., King Alfred's Place, Broad Street, Birmingham.

HOLMAN, Ivo, A.M.C.T., A.I.M., Chief Metallurgist, L. H. Newton and Co., Ltd., Thimble Mill Lane, Nechells, Birmingham 7.

LINDSAY, Robert Ian, B.Sc., A.R.T.C., Chief Metallurgist, Joseph Sankey and Sons, Ltd., Albert Street Works, Bilston, Staffs.

MATHIEU, Marcel, Dr.ès Sci., Office National d'Etudes et de Recherches Aéronautiques, Chatillon-sous-Bagneux (Seine), France.

ORLAY, John, B.Sc., Chief Chemist, Email, Ltd., Waterloo, Sydney, N.S.W., Australia.

PFOUTZ, Daniel R., A.B., Head, Technology Department, Carnegie Library of Pittsburgh, 4400 Forbes Street, Pittsburgh 13, Pa., U.S.A.

RIVOIRA, Luigi, Dott. Chim., Direttore, Laboratorio Ricerche, Esercizio Industrie Rivoira S.p.A. (E.I.R.), Corso Belgio 107, Torino, Italy.

ULVELING, Ralph A., B.Sc., Ph.B., Director, Detroit Public Library, 5201 Woodward Avenue, Detroit 2, Mich., U.S.A.

VIANELLO, Mario, Factory Manager, Metallurgica Feltrina S.p.A., Viale del Grappa 3, Feltre, Italy.
WATT, William Thomson, A.R.T.C., Foundry Superintendent, Dewrance and Co., Ltd., Hillington Foundry, Glasgow.
WOLF, Isaac Michael, B.Sc., A.I.M., Works Metallurgist, Hard Metals, Ltd., P.O. Box 564, Springs, Transvaal, South Africa.

As Junior Member

REES, George Philip, L.I.M., Imperial Chemical Industries, Ltd., Metals Division, Waunarlwydd, nr. Swansea.

As Student Members

JASPER, John Kenyon, Assistant Metallurgist, Research Laboratories, General Electric Co., Ltd., Wembley, Middlesex.
OHIRA, Goro, B.Sc., Student of Metallurgy, University of Birmingham.
REYNOLDS, Jack, B.A., Research Student, Inorganic Chemistry Laboratory, South Parks Road, Oxford.
SHAW, B. A., Laboratory Assistant, Fulmer Research Institute, Stoke Poges, Bucks.

PERSONAL NOTES

MR. P. A. BLACKWELL is now with Rolls-Royce, Ltd., Derby.

MR. R. D. BURN has been appointed Consultant to the British Metal Corporation, Ltd., and he has also been elected to the Board of the James Bridge Copper Works, Ltd., and to be an Alternate Director on the Board of the Wolverhampton Metal Co., Ltd.

MR. J. G. CATTERALL has been awarded the Ph.D. degree of London University and also the Diploma of Imperial College.

MR. G. L. DAVIS has been awarded the Ph.D. degree of London University.

MR. B. J. DUCKFIELD has been awarded a Second Class Honours degree in Metallurgy at University College, Swansea. He is now engaged in research at the Lysaght Division of The Steel Company of Wales, Ltd., Newport.

MR. BRYAN EVANS has received a Mutual Security Agency award for the study of production technology and management in the United States for one year. He will subsequently return to his post with Enfield Rolling Mills, Ltd.

MR. L. T. GREENFIELD has recently been awarded a Ph.D. degree in the Faculty of Engineering (Metallurgy) of London University. He is now with The Hoyt Metal Co. of Great Britain, Ltd.

DR. J. B. HAWORTH has left Murex, Ltd., to take up a position as Research Metallurgist with Sheepbridge Engineering, Ltd., Chesterfield.

DR. J. R. I. HEPBURN, Principal of Guildford Technical College, has been appointed Principal of Kingston Technical College, and will take up his new duties at the beginning of the Summer Term, 1953.

DR. P. H. JENNINGS has been appointed Temporary Assistant Lecturer in the Metallurgy Department, University College, Swansea.

MR. J. MCNEIL, Manager of the Technical Office of The Mond Nickel Co., Ltd., at Bombay, is on leave in England until the end of January.

MR. G. C. MITTER is now Assay Master and Superintendent, Silver Refinery Project, Indian Government Mint, Alipore, Calcutta 27.

MR. D. G. OSBORNE has received a Mutual Security Agency award and is spending one year in the United States.

MR. A. J. PURNELL is now employed at the Roan Antelope Copper Mine, Luanshya, Northern Rhodesia.

MR. C. F. ROGERS has returned to England from Singapore.

MR. J. E. SRAWLEY has left England to take up permanent residence in the United States.

MR. J. SYMONDS has left The British Aluminium Co., Ltd., Warrington, and taken a post with the Rhodesian Anglo-American Corporation.

MR. D. M. WAINHOUSE has graduated from the University of Leeds with the degree of B.Sc.

MR. M. A. WILLIAMSON has been appointed Director of Research to the Burroughs Adding Machine Co., Philadelphia, Pa. He was previously Associate Director of Development to the Pullman-Standard Car Manufacturing Co., Hammond, Ind.

OBITUARY

Dr. F. Johnson

Dr. Frederick Johnson, who was for 35 years Head of the Metallurgy Department at the Central Technical College, Birmingham, died on 1 October, aged 70.

After receiving his metallurgical education at Birmingham University, Johnson held a teaching post in Swansea for a few years before taking up, in 1912, the position in Birmingham which he held until his retirement in 1947. Here he was instrumental in greatly extending the scope of the classes in metallurgy and in raising the efficiency of the metallographic and physical-metallurgy sections. Pyrometry and heat-treatment, electroplating, metal colouring, and other metallurgical processes particularly applicable to the industries of Birmingham and district, received his special attention. He encouraged his senior students to take up research and to study the fundamentals of the processes they were engaged upon in their day-to-day work.

Johnson was an Original Member of the Institute, and between 1910 and 1922 he contributed a number of papers to the *Journal*, most of which dealt with the heat-treatment and working of copper and copper alloys, and the effect of additions and impurities on their properties. His researches resulted in the award of the D.Sc. degree by Birmingham University in 1921. He was a regular attender at Institute meetings and for many years contributed to *Metallurgical Abstracts*. He was a Past-President and Honorary Member of the Birmingham Metallurgical Society, and a Past Master of the Prometheus Lodge, which was formed by masonic members of the Birmingham Metallurgical Society in 1921.

In recent years Johnson wrote four manuals on metal working and heat-treatment. Three of these have already appeared, and the proofs of the fourth were corrected only a few days before his death.

Outside the field of metallurgy, he was widely known in amateur theatrical circles as an actor and producer.

A. SPITTLE

NEWS OF LOCAL SECTIONS AND ASSOCIATED SOCIETIES

South Wales Local Section

At a meeting held at the University College, Swansea, on 2 December, 1952, Mr. R. A. JOHNSON, of Aero Research, Ltd., Duxford, Cambridge, gave a lecture on:

Synthetic Resin Adhesives for Metals

The lecturer said that the development and use of high-strength metal adhesives had taken place during the last ten or twelve years only, and that was, of course, a very short time for an entirely new method of fabrication to be tested, accepted, and go into production on a large scale. That metal adhesives were being used to the extent that they were today reflected great credit, not only on those who developed the materials, but also on those who had had the courage to pioneer their use.

Some twelve years ago Aero Research, Ltd., had set to work to devise a metal-to-metal adhesive. By 1941, the work had proceeded sufficiently for a bonded compression panel to be submitted for test by the Royal Aircraft Establishment at Farnborough. This panel proved to have a higher compression strength than a riveted panel of similar design, and it was therefore decided to show the bonding process ("Redux" process) at an exhibition organized by the Society of British Aircraft Constructors in London in 1942. As a result, "Redux" was first used by The de Havilland Aircraft Co., Ltd., in the structure of the "Hornet" and the "Naval Mosquito". Subsequently, the same Company used "Redux" bonding in the "Dove", which was the first aircraft to have the main stringers in wing and fuselage glued or bonded to the skins. The experience gained in the production of this aircraft and its successful performance in all parts of the world, had undoubtedly been big factors in the decision to use "Redux" in the "Comet" jet airliner.

Apart from the uses made of this adhesive by the aircraft industry, there were many other purposes to which "Redux" had been applied. Though many of these were naturally connected with the bonding of metal to metal, there was also a wide variety of other applications, including the bonding of metal to rubber, wood, laminated plastics, and friction materials.

There was one other type of adhesive which has been approved by the Ministry of Supply for use on load-bearing structures of aircraft, and that was "Araldite". This adhesive, which appeared in many forms, had been invented by the Swiss company of Ciba, Basle, and differed from "Redux" in so far as it was a gap-filling adhesive which did not require the application of pressure during the curing cycle. So far as strengths were concerned, the shear strength of "Araldite" was approximately equal to that of "Redux", but these materials did differ in many other respects.

JOINT ACTIVITIES

Beilby Memorial Award, 1952

From the interest derived from the invested capital of the Sir George Beilby Memorial Fund, at intervals to be determined by the Administrators representing the Royal Institute of Chemistry, the Society of Chemical Industry, and the Institute of Metals, awards are made to British investigators in science to mark appreciation of records of distinguished work. Preference is given to investigations relating to the special interests of Sir George Beilby, including problems connected with fuel economy, chemical engineering, and metallurgy, and awards are made, not on the result of any competition, but in recognition of continuous work of exceptional merit, bearing evidence of distinct advancement in science and practice.

In general, awards are not applicable to workers of established repute, but are granted as an encouragement to younger men who have done original independent work of exceptional merit over a period of years.

The Administrators are empowered to make more than one award in a given year if work of sufficient merit by several candidates is brought to their notice. For 1951 two awards, each of one hundred guineas, were made to Dr. K. H. Jack and Dr. W. A. Wood.

Consideration will be given to the making of an award or awards from the Fund early in 1953. Outstanding work of the nature indicated may be brought to the notice of the Administrators, either by persons who desire to recommend the candidate or by the candidate himself, *not later than* 31 *December* 1952, by letter addressed to the Convener of the Administrators, Sir George Beilby Memorial Fund, Royal Institute of Chemistry, 30 Russell Square, London, W.C.1.

The letter should be accompanied by a short statement on the candidate's career (date of birth, education and experience, degrees and other qualifications, special awards, &c., with dates) and by *eight copies* of a list of references to papers or other works published by the candidate, independently or jointly.

NEWS OF KINDRED SOCIETIES

The Institution of Mining and Metallurgy

The Council of the Institution of Mining and Metallurgy has elected Professor J. A. S. Ritson, O.B.E., D.S.O., M.C., as President for the session 1953–54. Professor Ritson will take office at the General Meeting to be held on 28 May next.

OTHER NEWS

XIIIth International Congress of Pure and Applied Chemistry

The XIIIth International Congress of Pure and Applied Chemistry will take place in Sweden next year. The Congress will comprise a Physical Chemistry Section and a Symposium on the Chemistry of Wood and Wood Constituents, to be held in Stockholm from 29 July to 4 August 1953, and a Symposium on Macromolecules in Uppsala from 5 to 7 August. Excursions to works and laboratories are being arranged in connection with the meeting. All communications should be addressed to: XIIIth International Congress of Pure and Applied Chemistry, Stockholm 70, Sweden.

Second International Congress on Rheology

The Second International Congress on Rheology will be held at St. Hilda's College, Oxford, from Sunday, 26 July, to Friday, 31 July 1953. The Proceedings of the Congress will later be published in book form.

The Congress will cover the whole field of the study of deformation and flow of matter. Arrangements will be made for excursions, visits to Colleges, &c., during the Congress,

and accommodation is being arranged in Colleges or in rooms in Oxford. Full details may be obtained from the Organizing Secretary, Dr. G. W. Scott Blair, The University, Reading.

Leverhulme Research Fellowships, 1953

Application is invited for Fellowships and Grants in aid of research. The Fellowships and Grants are intended for senior workers who are prevented by routine duties or pressure of other work from carrying out research. They are limited to British-born subjects normally resident in the United Kingdom. In exceptional circumstances the Trustees may waive the condition as to residence.

The Trustees are also prepared to consider applications from groups of workers engaged upon co-operative programmes of research, particularly from those engaged upon long-distance programmes.

The duration of the awards will not normally extend over more than two years or less than three months, and the amount will depend on the nature of the research and the circumstances of the applicant.

Forms of application may be obtained from the Secretary, Miss M. Branney, Leverhulme Research Fellowships, 3/5 Salisbury Square, London, E.C.4, Telephone: City 1910.

Applications must be received on or before 31 December, 1952. Awards will be announced in May and will date from 1 September 1953.

DIARY

Local Sections and Associated Societies

2 December. Oxford. New Topics in Physical Metallurgy: "The Variation of Young's Modulus with Temperature and Its Relationship to Recrystallization", by Dr. D. W. Thomas; "Electron Micrography", by Dr. N. C. Welsh; and "The Study of Fracture Surfaces", by Dr. P. L. Pratt. (Black Hall, St. Giles, Oxford, at 7.0 p.m.)

2 December. South Wales. "Synthetic-Resin Adhesives for Metals", by R. A. Johnson. (University College, Metallurgy Department, Singleton Park, Swansea, at 6.30 p.m.)

4 December. Birmingham. Student Evening. (James Watt Memorial Institute, Great Charles Street, Birmingham 3, at 6.30 p.m.)

4 December. Leeds Metallurgical Society. "Delayed Fracture in Metals under Static Load", by P. Stables. (Chemistry Department, The University, Leeds 2, at 7.0 p.m.)

4 December. London. "Mould Reaction", by R. W. Ruddle. (4 Grosvenor Gardens, London, S.W.1, at 7.0 p.m.)

8 December. Scottish. "Bearings and Bearing Alloys", by R. T. Rolfe. (Institution of Engineers and Shipbuilders in Scotland, 39 Elmbank Crescent, Glasgow, C.2, at 6.30 p.m.)

10 December. Manchester Metallurgical Society. Discussion on "Unusual Metal Failures". (Engineers' Club, Albert Square, Manchester, at 6.30 p.m.)

11 December. Liverpool Metallurgical Society. "Friction and Lubrication", by Dr. D. Tabor. (Liverpool Engineering Society, The Temple, Dale Street, Liverpool, at 6.30 p.m.)

12 December. Sheffield. "The Mechanism of Adhesion of Electrodeposits upon Aluminium". Joint Meeting with the Institute of Metal Finishing, Sheffield and North-East Branch. (The University, St. George's Square, Sheffield 1, at 6.30 p.m.)

16 December. North East Metallurgical Society. "Recent Advances in Copper and Copper Alloys", by E. Voce. (William Newton School, Norton, Co. Durham, at 7.15 p.m.)

Other Societies

2 December. Institute of Metal Finishing, Midland Branch. "Pumps and Filtration Equipment in Electrodeposition", by H. Silman. (James Watt Memorial Institute, Great Charles Street, Birmingham 3, at 6.30 p.m.)

5 December. Institution of Mechanical Engineers. "An Experimental Investigation into the Redrawing of Cylindrical Shells", by S. Y. Chung and Professor H. W. Swift; and "An Experimental Investigation of the Yielding of Strip Between Smooth Dies", by A. B. Watts and Professor H. Ford. (Institution of Mechanical Engineers, Storey's Gate, St. James's Park, London, S.W.1, at 5.30 p.m.)

8 December. Physical Society, Acoustics Group. "Methods of Measurement of Elasticity of Solids", by G. Bradfield. (The Science Museum, South Kensington, London, S.W.7, at 5.0 p.m.)

8 December. Society of Chemical Industry, Corrosion Group. "The Corrosion-Resistance of Stainless Steel", by Dr. U. R. Evans. Joint Meeting with the Society of Chemical Industry, Yorkshire Section, and the Sheffield Metallurgical Association. (Grand Hotel, Leopold Street, Sheffield, at 6.45 p.m.)

11 December. Institute of Metal Finishing, North-West Branch. "A Topical Subject", by E. A. Ollard. (Engineers' Club, Albert Square, Manchester, at 7.30 p.m.)

11 December. Institute of Welding, South London Branch. "The Development of the Twin-Arc Welding Process", by E. C. Davies. (Institute of Marine Engineers, 85–88 The Minories, London, E.C.3, at 6.30 p.m.)

15 December. Institute of Metal Finishing, London Branch. "Some Aspects of Barrel Plating", by A. W. Wallbank. (Northampton Polytechnic, St. John Street, London, E.C.1, at 6 p.m.)

18 December. Royal Aeronautical Society. All-day discussion on "Fatigue". (Chemistry Lecture Theatre, University College, Gower Street, W.C.1.)

APPOINTMENTS VACANT

ASSISTANT MANAGER required for copper-smelting plant. Some previous experience required. Age about 30. Write to McKechnie Brothers, Ltd., Widnes, Lancs.

METALLURGIST of B.Sc. standard or equivalent required for Laboratory investigations. Aged 20–30. Applicant required to work in West London to start and transfer to Maidenhead at a later date. Canteen. Profit-sharing scheme. Write age, experience, and salary required. Box No. 342, Institute of Metals, 4 Grosvenor Gardens, London, S.W.1.

METALLURGIST wanted to take charge of quality control of foundry output and other material in heavy engineering works. Good salary to man with degree and practical experience. Must have foundry knowledge and practice. Apply giving full particulars of education, qualifications, and experience to Box No. 343, Institute of Metals, 4 Grosvenor Gardens, London, S.W.1.